

App. No. 10/709,986
Amendment dated July 21, 2006
Reply to Office action of April 21, 2006

Amendments to the Drawings:

The attached drawing sheet contains Fig. 13, replacing the original sheet containing Fig. 13.

In Fig. 13, the legend "Prior Art" has been added.

Attachments: Replacement Sheet
 Annotated Sheet Showing Change

REMARKS

Summary of Amendments

In the specification, paragraph [0057] has been amended at Applicants' initiative, to correct an oversight. That is, in the ranges given for θ_1 and θ_2 , the minimum value of θ_1 and the maximum value of θ_2 have been corrected, because in order to satisfy the relation $\theta_1 > \theta_2$, it would be impossible for θ_1 to equal 0, nor for θ_2 to be 90° .

Claims 1, 9, and 17 have been amended in response to the § 102 rejection of these claims.

Claims 3 and 11 have been amended to accord with the just-described correction to the range of values of θ_1 and θ_2 recited in paragraph [0057], and at the same time to address the § 112 rejection of these claims.

Claim 4 has been amended to correct the dependency problem pointed out by the examiner, and claim 5 has been cancelled.

Claims 6-8 and 14-16 remain withdrawn.

Drawings

The drawing replacement sheet attached to this paper corrects Fig. 13 by addition of the legend "Prior art," as required by the Examiner.

Claim Objections

Claims 3 and 11 were objected to because of the grammatical awkwardness of a certain phrase in the claim recitations. It is believed that by the present amendments to these claims, this informality has been corrected.

Rejections under 35 U.S.C. § 112

Claims 3-5 and 11-13 were rejected for indefiniteness. In particular, claims 3 and 11 were rejected because of parenthetical recitations that these claims contained, and claims 4 and 5, because of erroneous dependency recitations.

In amending claims 3 and 11 as noted under "Summary" above, the parenthetical aspect of the problem recitations has been eliminated. And also as noted under "Summary" above, claim 4 has been amended to correct the dependency problem, and claim 5 has been cancelled.

It is believed that the present amendments to the claims have resolved the indefiniteness, and that therefore the rejections should be withdrawn.

Rejections under 35 U.S.C. § 102

Claims 1, 2, 9, 10 and 17 were rejected under 102(b) as being anticipated by U.S. Pat. No. 6,339,270 to Ichiyama, and were rejected under 102(e) as being anticipated by U.S. Pat. No. 6,781,268 to Oku.

Claims 1, 9, and 17 have been amended to limit the configuration of the recited radial gap constituting the capillary seal section in between the outer-peripheral face of the sleeve and the inner-peripheral face of the ring-shaped portion, such that:

letting the minimum value of radial separation between the inner peripheral face of the ring-shaped portion and the rotation axis be $R1$, and the radial separation from the point in the vapor-liquid interface that is uppermost, in the direction toward the top plate and paralleling the rotation axis, be $R2$, then the minimum value $R1$ and the radial separation $R2$ fulfill the relation $R1 > R2$.

In terms of how the capillary seal section is configured, the result of this limitation on the distances $R1$ and $R2$ from the rotational axis of the bearing section is best exemplified by Fig. 4 of the present specification:

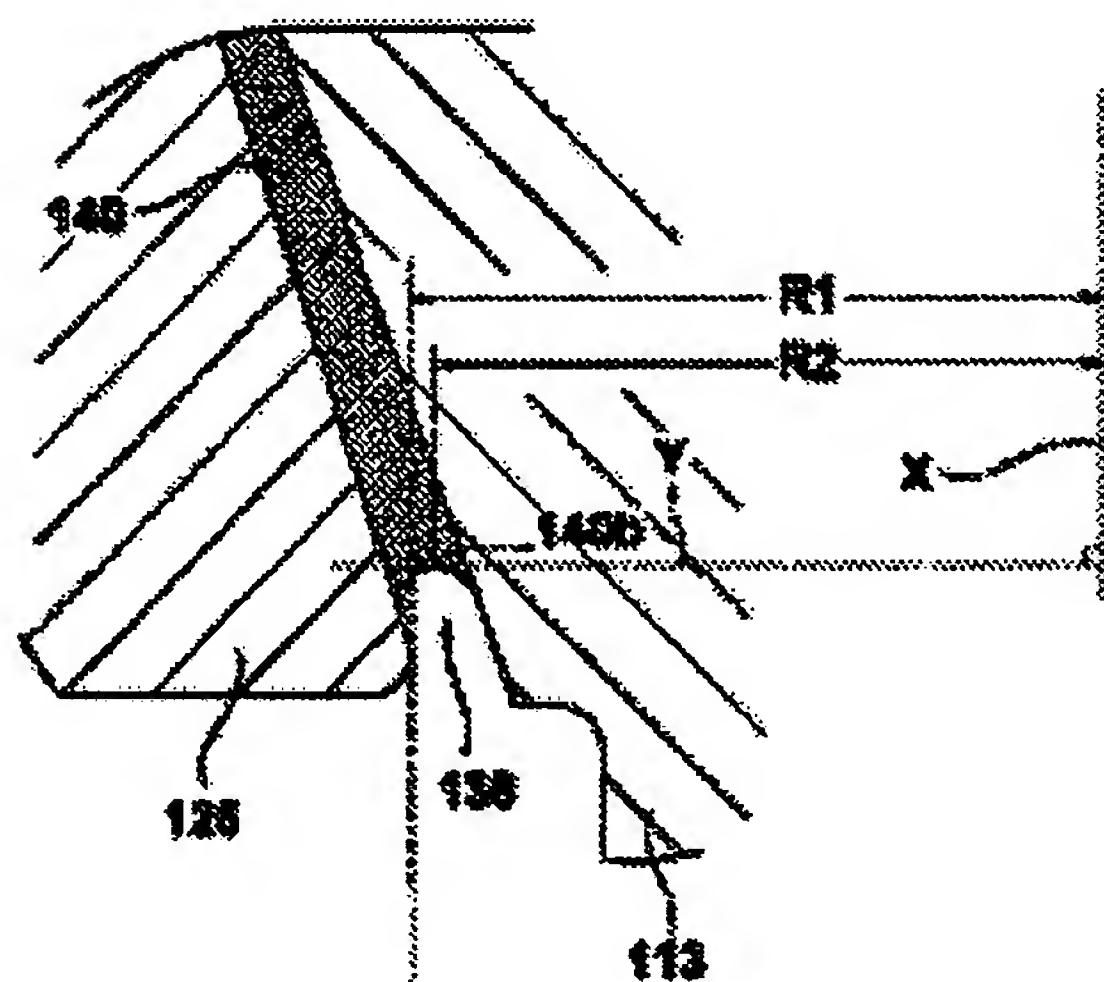


Fig. 4

present invention

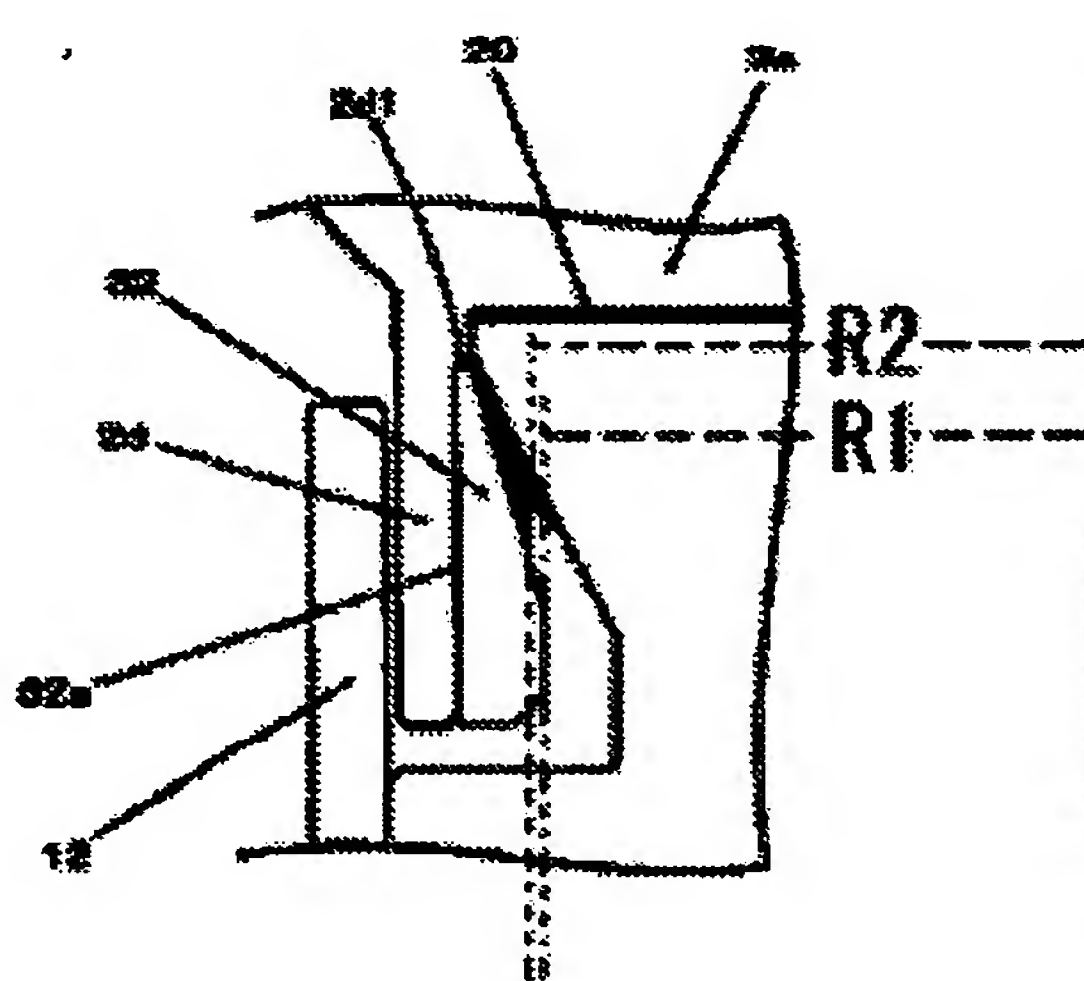


Fig. 3

Oku '268

That is, the result of configuring the capillary-seal radial gap such that the radial distance from "the point in the vapor-liquid interface that is uppermost, in the direction toward the top plate and paralleling the rotation axis" is less than the radial distance to the rim (25b2 in Fig. 2) of the ring-shaped portion is that the *midportion* of the vapor-liquid interface can be observed in order to adjust the volume of lubricant filled into the bearing.

The Ichiyama capillary-seal configuration does not anticipate that of present claims 1, 9, and 17, in the first place because cylindrical wall 2d in Ichiyama is straight, not inclined with respect to the rotational axis. Consequently, the Ichiyama configuration cannot exploit capillary and centrifugal forces to seal in the lubricant in the same way that a configuration according to the present invention does.

And is clear from a comparison, as presented above, of Fig. 4 from the present application and Fig. 3 from Oku, while surface 32a in Oku is sloped, the Oku configuration does not obey—and neither does the Ichiyama configuration—the limitation $R1 > R2$, now clearly recited in claims 1, 9, and 17, wherein $R1$ is the radial distance to the outer rim of the capillary seal and $R2$ is the radial distance from "the point in the vapor-liquid interface that is uppermost, in the direction toward the top plate and paralleling the rotation axis."

It is respectfully submitted that claims 1, 9, and 17 patentably distinguish the present invention from the disclosures of both the Ichiyama and Oku references, and that claims 2 and 10 are allowable as depending from allowable base claims.

Allowable Subject Matter

Applicants gratefully acknowledge that claims 3 and 11-13 were indicated as being allowable if rewritten in independent form to include the limitations of their base, and any intervening dependent, claims. Nevertheless, for the foregoing reasons, it is believed that the base claims for claims 3 and 11-13 are allowable as presently amended, and thus that claims 3 and 11-13 are allowable in their dependent form.

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Accordingly, Applicant courteously urges that this application is in condition for allowance. Reconsideration and withdrawal of the rejections is requested. Favorable action by the Examiner at an early date is solicited.

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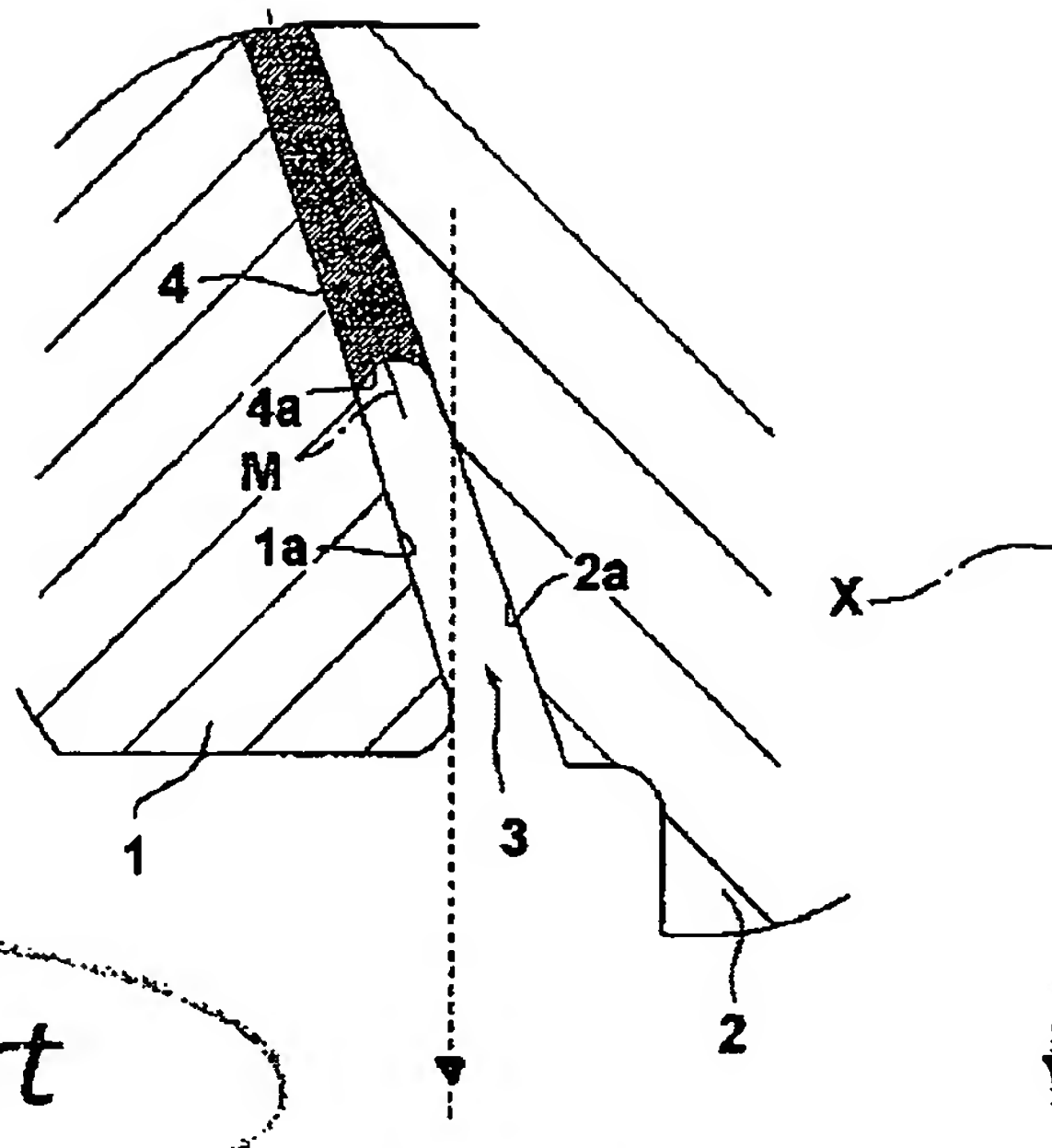


Fig.13

Prior Art

Legend added